

XX.—Position of the Sponge-spicule in the Spongida; and  
 Postscript on the Identity of *Squamulina scopula* with the  
 Sponges. By H. J. CARTER, F.R.S. &c.

IN the 'Annals' for 1870 (vol. vi. pp. 222, 223, pl. xv. figs. 1-7) Mr. Saville Kent has described and figured, under the name of *Rhaphidotheca Marshall-Hallii*, a remarkable little sponge which he found growing on *Lophohelia prolifera*, in 500 fathoms, on the coast off Cezimbra, Portugal, in 1870. A section of the sponge, which was half an inch in diameter, is given in fig. 2 (*l. c.*), where a cell of the *Lophohelia* may be observed to form the centre. On account of the character of the greater part of the spiculation, Mr. Kent rightly calls this little hemispherical sponge an *Esperia*; but the remarkable part is, that it is faced by a layer of pin-like spicules, whose heads, being outwards and in contact with each other, form a kind of tessellated armature on the surface, while their points mingle with the points of the skeleton-spicules of the *Esperia* within. In the footnote at p. 253 (*ib.*) Mr. Kent very naturally, therefore, questions my statement respecting the spicular elements of *Squamulina scopula*, viz. that their "globular heads" being outwards should have satisfied any one that this organism was not a sponge, or words to this effect ('Annals,' 1870, vol. v. p. 312), citing *Rhaphidotheca Marshall-Hallii*, the little sponge to which I have just alluded, as affording an instance to the contrary.

It was not, however, until the latter part of 1877 that I had an opportunity of examining a portion of this interesting little sponge, which, together with two mounted slides of it, was lent to me by my friend Dr. J. Millar, to whom it had been given by Mr. Kent. At first sight I was inclined to agree with Mr. Kent, and said, "Verily (although a pin-like spicule of this form among the *Esperiadæ* is a great anomaly) here is a sponge with the heads of its spicules outwards, contrary to my assertion that the proper spicules (that is, the spicules made by the sponge itself) never have their large ends outwards." Still this, as will presently be seen, was only a *primâ facie* opinion; for when I came to examine microscopically what Dr. Millar had lent me, much was found to modify these views, since, in addition to the spiculation of the *Esperia* (viz.:—1, a sub-pinlike, staple skeleton-spicule, radiating from the centre in branched bundles; 2, a smaller acerate one, curved and binding together the points of the latter towards the surface; 3, an inequianchorate, single and in rosette-like groups; 4, a bihamate (*fibula*); and 5, the sheaf-shaped bundles of minute acerates, looking like sawdust by reflected light),

there were present the spiro-sinuous flesh-spicules of *Cliona abyssorum*, which I had described and figured from a specimen found in *Lophohelia prolifera*, dredged up at the mouth of the English Channel ('Annals,' 1874, vol. xiv. p. 249, pl. xiv. fig. 33, and pl. xv. fig. 45, a, b, c), to such an extent that it appears in great plurality even in the minute fragments of both slides mounted by Dr. Millar, also in the dust of the pill-box containing the specimen of *Rhaphidotheca*, and in crevices of the pieces of *Lophohelia* which accompanied it.

Thus a very different aspect of this little sponge became manifest, and I could not help inferring that the *Esperia*, as is often the case with sponges not content with their own spicules, or having no means of obtaining silex for forming a sufficient number of them, had not only appropriated the sinuous flesh-spicules of *Cliona abyssorum*, which infests *Lophohelia prolifera*, but the pin-like skeletal ones also; and that, after all, the presence of the pin-like spicules with their heads outwards did not, in this instance, invalidate the view mentioned, viz. that the proper spicules of a sponge are never found in that sponge with their large ends outwards.

Still, the pin-like spicule in this little sponge is not identical in form with that of *Cliona abyssorum*, as may be seen by comparing Mr. Kent's with my figures of it (*l. c.*); and the only conclusion I can come to, in consequence, is, that Mr. Kent's will be found to characterize a variety of *Cliona abyssorum* in the *Lophohelia prolifera*, bearing the pin-like spicule of this misleading little sponge, or the latter has been modified in form by the *Esperia* itself; which, it is very desirable to determine.

When viewed in a perpendicular section laterally, the real surface of the *Esperia* can be seen to be marked, as usual, by the horizontal layer of acerates binding together the points of the sub-pinlike skeleton-spicules of the *Esperia*, in which none of the sub-pinlike or large ends are observed to be outwards, while the reverse is the case with all the pin-like spicules that form its crust, which have been inferred to have come from a *Cliona*—the former being the case with the "proper spicules" of a sponge, and the latter that of spicules derived from another or foreign source. It would be desirable, then, to ascertain if the *Cliona*, which in all probability infests the *Lophohelia* on which this little sponge has grown, has a pin-like spicule like that covering the *Esperia*.

If, however, Mr. Kent has not been happy in the instance of *Rhaphidotheca Marshall-Hallii*, as opposed to my views, he has caused me to considerably modify them, as well as the statement made in my "Notes introductory to the Study of

the Spongida," viz. that "where a spicule which has a point projects beyond the surface of the sponge to which it belongs, that point will be always outermost" ('Annals,' 1875, vol. xvi. p. 16); for this is by no means the case, since where the spicule is intended for anchoring, or for binding down the surface-spicules of the body of the sponge, and by thus intermingling with each other to form a kind of crust, the branched head is outwards and the pointed end of the shaft inwards.

Thus in the anchoring spicules of the hexactinellids *Rossella* and *Euplectella*, in *Geodia*, in *Stelletta* (especially *Wyvillethomsonia Wallichii*), and in *Tethya* (type *T. cranium*), also in some of the calcareous sponges, the former is the case; while the large surface-spicules on the body of *Rossella* and many other hexactinellids, together with the large trifid ("zone-") spicules of *Geodia* and *Stelletta*, especially in *Wyvillethomsonia Wallichii*, all the Lithistids, and some of the calcareous sponges (ex. gr. *Leuconia Johnstonii*, 'Annals,' 1871, vol. viii. pl. i. fig. 6) furnish instances of the latter.

Yet in other cases, where the spicules are not branched, but linear and pointed at both ends, especially in the Renierida, the points bristle on the surface; and that this would be the case if one end were obtuse, is evidenced by the Suberitida, in which the pin-like spicule always holds this position. Even in *Placospongia melobesioides* and *Xenospongia patelliformis*, in which the crusts respectively are composed of a layer of *Geodia*-like siliceous balls and *Stelletta*-like stellates, accompanied by a pin-like skeleton-spicule only, the point of the latter is outwards.

Therefore in the "Notes &c." to which I have above alluded, it should have been stated, in the section immediately following the tabular view of the skeleton-spicules therein given, that while the spicules of the "linear group" have their pointed ends directed outwards, the reverse is the case with the "ramular group." How this omission occurred I cannot conceive, as the last spicules mentioned in this table are the "anchoring" ones of the Hexactinellida. Thus it is rather an error of omission than of commission, of which, I fear, many more will be found in my "Notes."

#### POSTSCRIPT.

##### *On the Identity of Squamulina scopula with the Sponges.*

In a paper entitled "Observations upon Professor Ernst Häckel's Group 'Physemaria,' and on the Affinity of the Sponges," Mr. Saville Kent, in the last number of the

'Annals' (p. 12 *et seq.*), assumes that Hæckel has identified my *Squamulina scopula* = *Haliphysema Tumanowiczii*, Bk., with his genus *Gastrophysema*, and then infers (provisionally, p. 15) that, as Prof. Hæckel ('Jenaische Zeitschrift,' erstes Heft, Taf. iv.-vi.) represents collared, flagellated, monadic bodies with it, it is a sponge.

Now Hæckel has not identified my *Squamulina scopula* with his *Gastrophysema*, as proved by his figures of the latter, wherein the cavity of the body is not prolonged into the polythalamous foot or test; and therefore Mr. Kent's provisional inference falls to the ground.

My *Squamulina scopula*, as may be seen by my figures ('Annals,' 1870, vol. v. pl. iv.), consists of a subpolythalamous discoid test, whose opening on the summit is prolonged into a tubular scopuliform structure, which is simple in one and dichotomously branched in the other species or variety; so that the latter closely resembles in form the calcareous test of *Carpenteria*, whose opening at the summit is also prolonged into a tubular branched state, which is composed partly of calcareous matter supplied by the animal itself, and partly of foreign material consisting chiefly of more or less fragmentary sponge-spicules: when the calcareous tube fails, which is often the case, the tube is *wholly* composed of the latter, like that of *Squamulina scopula*, only that the tubulation of *Carpenteria* terminates in fine branches, while those of *Squamulina scopula* and its variety *ramosa* terminate in round scopuliform extremities.

Again, whether there be collared flagellated monadic bodies in *Squamulina scopula* or not, the polythalamous character, so appropriately given by the illustrious Ehrenberg to what we now call Foraminifera, decides the question with those who are well acquainted with the structure of the latter as well as that of the Spongida. No sponge, that I know of, presents the polythalamous character of *Squamulina scopula*, in its foot (root) or anywhere else.

That Hæckel did not know what he was talking about is evident when he attempts to identify the bundle of anchoring spicules of *Wyvillethomsonia Wallichii*, formed by the sponge itself, with the heterogeneous material brought together by the organism which he represents under the name of *Haliphysema echinoides* (*op. cit.* Taf. 11. fig. 127), and which Schmidt would provisionally call "*Stelletta echinoides*" (Archiv f. mikroskop. Anat. Bd. xiv. p. 260).

I do not mean to assert that Hæckel's figures of *Gastrophysema* do not represent his Physemaria; but I mean to assert most emphatically that they do not represent my *Squa-*

*mulina scopula*, any more than his *Haliphysema echinoides* represents *Wyvillethomsonia Wallichii*. So it is evident from this that, in attempting to generalize,

“A little knowledge is a dangerous thing.”

*Squamulina scopula* in its simple and branched forms is very common on this coast (Buddleigh-Salterton, Devon); but if reexamined, as Mereschkowsky suggests a little further on in the same number of the ‘Annals’ (p. 77), it is impossible to do away with the bearing of the polythalamous character above mentioned, which no sponge that I know of possesses, independent of the other proofs that *Squamulina scopula* is decidedly a species of Foraminifera.

The embryo of the Spongida grows up into branches from a *root*; that of the Foraminifera from a *cell* into cells or chambers, successively increasing in size and, for the most part, arranged spirally. Thus far the two organisms *cannot* be confounded.

#### XXI.—Description of a new *Scops Owl* from Ceylon.

By Capt. W. V. LEGGE, R.A., M.B.O.U., &c.

AT Trincomalie, in July 1875, I obtained a young bird belonging to a small species of *Scops Owl* unknown to me. I kept it some little time; and it then died. In May of the following year, while staying with Mr. Bligh, of Catton Estate, Haputale, I met with a skin of an adult bird, which he had caught in the chimney of his bungalow at Kotmalie, and which I recognized as belonging to the same species as my young bird. Its small size and dark plumage prevented my identifying it with any *Scops Owl* described in Mr. Sharpe’s Catalogue; and through the kindness of Mr. Bligh I was enabled to send it home to the British Museum. It has now been presented to the national collection by that gentleman.

Messrs. Whyte and Co., of Kandy, have just sent home to Mr. Sharpe, on loan, a second example, killed in one of the coffee-districts near Kandy. On our comparing the series thus obtained with the *Scops Owls* in the national collection, this species turns out to be new, being distinguished from other Indian members of the genus by its small size and dark colour. Messrs. Whyte and Co. state they have received once before an example of this owl\*. I

\* I have examined a small rufous owl in the Colombo Museum, which appears to belong to this species.